



COLLIDER-ACCELERATOR DEPARTMENT

Title: EMS Training For LINAC Operations

Prepared by: M. Van Essendelft

Group: ESH&Q

Approvals

Signature on File Date: _____
ESH&Q Division Head

Signature on File Date: _____
Collider-Accelerator Department Chairman

(Indicate additional signatures)

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☐ x FS Representative: _____ Date: _____
☐ x Radiological Control Coordinator: _____ Date: _____
☐ x Chief ME: _____ Date: _____
☐ x Chief EE: _____ Date: _____
☐ x Environmental/P2 Coordinator: _____ Date: _____
☐ x QA Manager: _____ Date: _____
x ☐ Other: _____ *Signature on File* Date: _____

Environmental Training Package for the Linear Accelerator

This package has been designed to aid in the delivery of required job-specific training for the following Linac activities identified in the environmental process assessment:

- Radioactive, Regulated Industrial Waste and Hazardous Waste generation
- NYSDEC-permitted bead blasting
- Production of airborne radionuclides in tunnel
- Operation of oil storage tanks
- Use of electrical equipment containing PCBs
- Electrical component fabrication

Your position has been determined to have a potential significant impact the environment. Thus, the C-A Department management has supplemented the questions on the following pages with the appropriate information for your specific work/processes.

This environmental material is incorporated into your current job and procedure training. If you have specific questions about the written answers after you read the material, then you should contact the C-A Department ESH&Q Division Head, Ray Karol (<mailto:rck@bnl.gov>).

You may keep this material as a handout and use it as a reference aid. This specific training course is linked to your job-training assessment (JTA). You must read and acknowledge this material as part of the qualification to perform operations at the Linac facility. Please fill out the Read and Acknowledgement form and return it promptly.

[Read & Acknowledgement Form](#)

Environmental Process Evaluation Title: Linear Accelerator

Environmental Aspects: hazardous waste generation, industrial waste generation radioactive waste generation, atmospheric discharges, liquid discharges, storage/use of chemicals, Storage/Use of Radioactive Material, Water Consumption, Power Consumption and PCB's.

Contacts for Further ESHQ Information:

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Self Evaluation Program, A. Piper
Source Custodian, P. Cirnigliaro
Tier 1 Coordinator, A. Piper
Training Manager, J. Maraviglia
Training Records, A. Luhrs

Course Objective: Because your work activities have been identified as having a potential significant impact to the environment, this course has been designed to provide you with the job-specific information that you must know to protect the environment.

- 1) What potential impacts to the environment are associated with your activities?
 - Hazardous, Radioactive and Industrial wastes are generated
 - Radioactive gasses are released to the atmosphere during accelerator operations
 - Chemicals may be released to the site sanitary sewer system.
 - Particulate matter may be released to the atmosphere by the bead blaster.
 - Waste oil is stored in two 1,000-gallon capacity storage tanks outside of Bldg. 930.
- 2) What consequences may result if your operations were to impact the environment?
 - Hazardous, Radioactive or Industrial waste mismanagement could contaminate the environment and/or incur regulatory penalties.
 - Improper water discharges to the sanitary sewer system could contaminate groundwater and/or result in a violation of the BNL SPDES discharge permit.
 - Unmonitored radioactive atmospheric discharges could contaminate the environment, create public radiation exposures and/or violate federal Clean Air Act regulations.
 - Improper release of radioactive materials to uncontrolled areas may result in enforcement actions under 10CFR835.
 - Improper handling of waste can create loss of regulator and public trust.
- 3) What benefits or positive effects would you notice with improved environmental performance?
 - Safer, cleaner workplace.

- Clear roles and responsibilities.
- Improved relationship with regulators and the public.
- Control of disposal costs
- Reduced emissions.

4) What role and responsibility do you have for these potential impacts and environmental performance?

- To ensure Hazardous, Radioactive and Industrial wastes are handled according to C-A procedures
- To ensure alarms and other controls are tested as required
- To take action when alarms sound or when controls fail
- To report unexpected water or chemical releases
- To create and keep appropriate records relative to operational controls
- To contact supervision if unsure of how to perform the work or if the procedures are unclear or incorrect

5) What controls or procedures are implemented to reduce the potential for emergency?

- [C-A OPM 8.20](#), Handling and Disposing of Hazardous Waste
- [C-A OPM 8.20.2](#), Radioactive Waste Disposal
- [C-A OPM 8.22](#), Handling and Disposal of Non-Hazardous and Recyclable Solid Waste
- [C-A OPM 8.20.1](#), C-A Hazardous Waste Trailer (HWT) (90 Day Accumulation Area)
- [C-A OPM 1.15](#), Liquid, Airborne Effluents
- [C-A OPM 1.14](#), General Requirements for Liquid Storage
- [C-A OPM 2.28](#), Enhanced Work Planning
- Tier I program and self-assessments

6) How would you respond in an emergency to reduce the potential for environmental impact and what actions could be taken to mitigate the event?

- See [C-A OPM 3.0](#), Local Emergency Plan for the C-A Department
- See [C-A OPM Chapter 10](#), Occurrence Reporting
- Call Spill Response Hotline – X2222 or 911

7) What pollution prevention and waste minimization techniques have been or could be considered to reduce or eliminate the potential to impact the environment?

- Mercury vapor ignition switches are returned to the manufacturer for mercury recovery.
- Waste oil generated at the Linac is sometimes used as a fuel at the Central Steam Facility.
- Suggestions or comments about pollution prevention or waste minimization are welcome by C-A management.

8) Are there any key Environmental-specific Competency Requirements for this position?

- None.

Additional Environmental Information:

Click on the items below to learn more about C-A LINAC Operations.

- [Process Assessment](#) for C-A LINAC Operations
- [Environmental Management Program](#) for C-A LINAC Operations
- [Operational Control Form](#) for C-A LINAC Operations